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MINOR ARTICLES OF FARM EQUIPMENT

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FEW farmers realize the extent of their investment in small items of equipment or the time and inconvenience involved in buying them singly or in small lots. In planning the farm equipment due consideration should be given to the necessary outlay for these minor tools. If possible they should be purchased all on one order. This will save time and, usually, money. Also, it will entail a total expenditure sufficiently large to impress the farmer with the importance of giving systematic care to his small tools. It is shown in this bulletin that for a general farm of 160 acres in the Middle Western States, the necessary minor tools, ranging from a husking peg to a grindstone, will cost from \$100 up to the neighborhood of \$200.

MINOR ARTICLES OF FARM EQUIPMENT.

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EXTENT OF MINOR EQUIPMENT.

This bulletin presents the results of a study made to determine the number and cost of all minor articles of equipment necessary for a farm of the general type. This study did not include wagons, machinery, or other articles which, because of their bulk or value, would be classed as items of major importance, but was confined to the miscellaneous small tools, utensils, and sundries usually purchased singly or in small lots at a slight cost for each.

The total cost of these miscellaneous articles usually is much higher than the estimates currently given by farmers and writers, but, owing to the great number of small purchases, this fact is seldom realized, except by the few who have made careful inventories at stated intervals. Farmers in general neglect this valuable portion of their equipment. Indeed, the decrease in value of the small articles probably is much more rapid than that of the major items. The low current estimates on the cost of this part of the equipment inevitably cause disappointment to the manager of a new farming venture who finds it necessary to make an unexpected increase of outlay on this account, attended by a readjustment of his plans.

In selecting the minor tools to equip a farm provision must be made for the articles needed for the care and repair of buildings, fences, machinery, etc., the care of live stock, the production of crops, and the various other interests of the farm. With every change in the type of farm, involving a new combination of enterprises, a change in minor equipment will be necessary. For each of the many specialized types of farms certain articles will be needed which will not be found necessary on general farms.

To attempt to determine the equipment in small items necessary for all these special types is beyond the scope of this paper, which is intended to cover only those items found in most common use on farms of the general type. By this is meant farms of moderate size,

NOTE.—This bulletin is practically a reprint of Bureau of Plant Industry Circular No. 44, by L. W. Ellis, the contents of which have been revised and supplemented so as to bring it up to date.

on which both crops and live stock are raised, without particular emphasis on the production or disposition of any one product.

The nature of the minor equipment will be determined largely by the character of the farm enterprises and the proximity of repair-shop facilities, while its extent may be governed by the size of the farm, the number of workmen, and the financial circumstances of the proprietor. Perhaps both the nature and the extent of the minor equipment will be influenced most by the farmer's attitude with regard to small economies and his ability to use tools to advantage.

LIST OF ARTICLES.

Following is a summary list of the inventories of minor equipment for 33 general farms in Ohio. The classification of articles as "essential" or merely "desirable," while somewhat arbitrary, is based in the main on the percentages of farms reporting the various tools. Thus, with few exceptions, no article is listed as "essential" unless found on at least 20 per cent of the farms.

List of articles of minor equipment found on one or more of the 33 farms.	Number needed on farm.	Approximate cost—		
		Per article.	Of articles suggested as essential.	Of articles not essential but very desirable.
General purpose:				
Anvil.....		\$7. 00		\$7. 00
Auger handle.....	1	.20	\$0. 20	
Auger bits.....	Set of 6.		2. 00	
Ax.....	2	1. 25	2. 50	
Ax (hand).....	1	.75	.75	
Awl.....	1	.10	.10	
Barrel.....		.75		
Basket.....		.30		
Bell (farm).....	1	2. 00		
Bench screw.....	1	.60	.60	
Brace and bits.....	Set.	2. 50	2. 50	
Brush hook or scythe.....		1. 25		
Cant hook.....	1	1. 25	1. 25	
Chain (log).....	2	1. 50	3. 00	
Chalk line.....	1	.10	.10	
Chisel (cold).....	2	.20	.40	
Chisel (wood).....	4	.40	1. 50	

List of articles of minor equipment found on one or more of the 33 farms.	Number needed on farm.	Approximate cost—		
		Per article.	Of ar- ticles sug- gested as es- sential.	Of ar- ticles not es- sential but very desir- able.
General purpose—Continued.				
Compasses.....	1	\$0. 30	\$0. 30	.....
Ditch cleaner.....	.....	1. 25	.....	\$1. 25
Drawing knife.....	1	. 75	. 75	.....
Drill press.....	.....	10. 00	.....	10. 00
Drills.....	4	. 50	2. 00	.....
File (flat).....	2	. 15	. 30	.....
File (round).....	1	. 30	. 30	.....
File (taper).....	2	. 10	. 20	.....
Forge.....	.....	16. 00	.....	16. 00
Grindstone.....	1	4. 00	4. 00	.....
Grubbing hoe.....	.....	. 50	.....	.....
Hammer (claw).....	2	. 50	1. 00	.....
Hammer (rivet).....	.....	. 50	.....	. 50
Hammer (sledge).....	1	1. 00	1. 00	.....
Hatchet.....	1	. 75	. 75	.....
Hoisting block.....	.....	2. 00	.....	2. 00
Jackscrew.....	.....	2. 00	.....	2. 00
Ladder.....	1	2. 00	2. 00	.....
Ladder (step).....	1	1. 75	1. 75	.....
Lantern.....	2	. 90	1. 80	.....
Level.....	1	. 75	. 75	.....
Machine oil.....	1 gallon.	. 30	. 30	.....
Mallet (wood).....	1	. 25	. 25	.....
Mattock.....	1	. 75	. 75	.....
Maul.....	1	. 60	. 60	.....
Nippers (farrier's).....	1	1. 00	1. 00	.....
Oil can.....	1	. 10	. 10	.....
Padlock.....	.....	. 40	.....	.....
Paint brush.....	.....	. 30	.....	.....
Pick.....	1	. 75	. 75	.....
Pinch bar.....	1	. 50	. 50	.....
Pliers.....	1	. 50	. 50	.....
Pincers (carpenter's).....	1	. 60	. 60	.....
Plane.....	2	1. 25	2. 50	.....
Punch.....	2	. 15	. 30	.....

List of articles of minor equipment found on one or more of the 33 farms.	Number needed on farm.	Approximate cost—		
		Per article.	Of ar- ticles sug- gested as es- sential.	Of ar- ticles not es- sential but very desir- able.
General purpose—Continued.				
Post-hole digger.....	1	\$1. 00	\$1. 00	.....
Rasp.....	1	. 50	. 50	.....
Sand sieve.....	.....	. 50	.....	\$0. 50
Saw (buck).....	.....	. 75	.....	.....
Saw (compass).....	1	. 30	. 30	.....
Saw (crosscut).....	1	3. 00	3. 00	.....
Saw (hack).....	.....	. 50	.....	. 50
Saw (hand).....	2	1. 25	2. 50	.....
Saw (set).....	1	. 60	. 60	.....
Scale (counter).....	.....	3. 00	.....	3. 00
Scale (farm).....	.....	8. 00	.....	8. 00
Scale (spring).....	1	. 50	. 50	.....
Scale (steelyard).....	.....	2. 00	.....	.....
Scratch gauge.....	1	. 40	. 40	.....
Screw driver.....	2	. 25	. 50	.....
Screw plate.....	.....	10. 00	.....	10. 00
Shovel (D).....	1	1. 00	1. 00	.....
Shovel (round pointed).....	1	1. 00	1. 00	.....
Tinner's snips.....	.....	1. 25	.....	1. 25
Spade (tile).....	.....	1. 75	.....	1. 75
Square (bevel).....	1	. 40	. 40	.....
Square (steel).....	1	. 75	. 75	.....
Square (try).....	1	. 25	. 25	.....
Tape line.....	1	. 50	. 50	.....
Trap (rat).....	.....	. 50	.....	.....
Trap (steel).....	.....	. 15	.....	.....
Trowel (brick).....	.....	. 40	.....	. 40
Trowel (plastering).....	.....	1. 00	.....	.....
Tongs.....	.....	. 50	.....	. 50
Tool grinder.....	.....	3. 00	.....	3. 00
Vise.....	.....	5. 50	.....	5. 50
Wedge (iron).....	2	. 30	. 60	.....
Whetstone.....	2	. 10	. 20	.....
Whitewash brush.....	.....	. 75	.....	.....
Wire splicer.....	1	1. 00	1. 00	.....

List of articles of minor equipment found on one or more of the 33 farms.	Number needed on farm.	Approximate cost—		
		Per article.	Of articles suggested as essential.	Of articles not essential but very desirable.
General purpose—Continued.				
Wire stretcher.....		\$8. 00		\$8. 00
Wrench (pipe).....	1	1. 50	\$1. 50	
Wrench (monkey).....	2	. 50	1. 00	
			57. 45	81. 15
Household and farm:				
Butcher knife.....	2	. 30	. 60	
Cold frame.....		2. 50		
Crates.....		. 40		
Cultivator (hand).....		4. 00		4. 00
Flat.....		. 10		
Hoe.....	2	. 40	. 80	
Hog scraper.....	2	. 10	. 20	
Hog hook.....	1	. 05	. 05	
Kettle.....		2. 50		2. 50
Lard press and sausage stuffer.....		5. 50		5. 50
Lawn mower.....	1	4. 00	4. 00	
Tree pruner.....	1	1. 00	1. 00	
Pruning shears.....	1	. 40	. 40	
Rake (garden).....	1	. 50	. 50	
Rake (lawn).....		. 40		
Sausage grinder.....		2. 00		2. 00
Spade.....	1	. 75	. 75	
Sprinkler.....		. 50		
Trowel.....		. 25		
			8. 30	14. 00
All stock:				
Broom.....	2	. 50	1. 00	
Clipping machine.....		10. 00		10. 00
Hand sprayer.....		. 75		
Manure fork.....	2	. 70	1. 40	
Pail.....	3	. 15	. 45	

List of articles of minor equipment found on one or more of the 33 farms.	Number needed on farm.	Approximate cost—		
		Per article.	Of articles suggested as essential.	Of articles not essential but very desirable.
All stock—Continued.				
Tie chain.....		\$0. 25		
Tie rope.....		. 25		
Wheelbarrow.....	1	4. 00	\$4. 00	
			6. 85	\$10. 00
Horse and driving:				
Bit.....		. 40		
Blanket.....	3	2. 00	6. 00	
Brush.....	2	. 50	1. 00	
Chamois skin.....		. 50		
Clevis.....		. 10		
Collar.....		3. 00		
Currycomb.....	2	. 25	. 50	
Evener (2-horse).....		1. 50		
Evener (3 or 4 horse).....		2. 00		
Fly nets.....		1. 00		
Halters.....	6	. 75	4. 50	
Jack (buggy).....		. 75		
Jack (wagon).....	1	1. 00	1. 00	
Muzzle.....		. 20		
Neck straps.....		. 75		
Neck yoke.....		1. 00		
Oil (harness).....	2 quarts.	. 25	. 50	
Punch (harness).....	1	. 50	. 50	
Riveting machine.....	1	. 50	. 50	
Rivets.....	1 box.	. 10	. 10	
Saddle.....		10. 00		
Snap.....		. 05		
Sponge.....	1	. 10	. 10	
Storm apron.....	1	. 75	. 75	
Storm front.....		4. 00		
Sweat pad.....		. 35		
Syringe.....	1	. 60	. 60	
Tie rope.....		. 15		

List of articles of minor equipment found on one or more of the 33 farms.	Number needed on farm.	Approximate cost—		
		Per article.	Of articles suggested as essential.	Of articles not essential but very desirable.
Horse and driving—Continued.				
Whiffletree.....		\$0. 30		
Whip.....	1	. 50	\$0. 50	
Whisk broom.....	1	. 10	. 10	
			16. 65	
Cattle:				
Calf muzzle.....		. 20		
Cowbell.....		. 25		
Crate.....		. 50		
Dehorning clipper.....		5. 00		\$5. 00
Milk tube.....	1	. 25	. 25	
Tie rope or chain.....		. 30		
			. 25	5. 00
Dairy:				
Can (milk).....		1. 50		
Churn.....		4. 00		
Crock (milk).....		. 10		
Pail (milk).....	2	. 50	1. 00	
Pan (milk).....		. 20		
Bowl (butter).....		. 50		
Crock (butter).....		. 20		
Scales (butter).....		1. 50		
Skimmer.....		. 10		
Strainer.....	1	. 50	. 50	
Thermometer.....	1	. 25	. 25	
			1. 75	
Sheep:				
Bell.....		. 15		
Shears.....		1. 00		

List of articles of minor equipment found on one or more of the 33 farms.	Number needed on farm.	Approximate cost—		
		Per article.	Of articles suggested as essential.	Of articles not essential but very desirable.
Swine:				
Crate.....		\$1. 00		
Portable house.....		4. 00		
Ring pliers.....	1	. 20	\$0. 20	
Rings.....	1 box.	. 10	. 10	
Snout clipper.....		. 40		
Tongs.....	1	. 50	. 50	
			. 80	
Poultry:				
Coop.....		3. 00		
Bone cutter.....		6. 00		\$6. 00
Egg tester.....	1	. 15	. 15	
Feed hopper.....		. 25		
Feed pan.....		. 05		
Feed sieve.....		. 25		
Fountain.....		. 25		
Hover box.....		. 25		
Leg bands.....				
Trap nest.....		. 25		
			. 15	6. 00
Corn:				
Ensilage fork.....		1. 00		
Hand planter.....	1	1. 50	1. 50	
Husking gloves.....		. 75		
Husking peg.....		. 10		
Knife.....	2	. 25	. 50	
Seed rack.....	1			
Seed tester.....	1	. 50	. 50	
Shock tier.....	1	. 50	. 50	
			3. 00	

List of articles of minor equipment found on one or more of the 33 farms.	Number needed on farm.	Approximate cost—		
		Per article.	Of articles suggested as essential.	Of articles not essential but very desirable.
Hay:				
Baled-hay hook.....		\$0. 30		
Carrier.....	1	3. 00	\$3. 00	
Hand fork.....	3	. 60	1. 80	
Hand seeder.....		5. 00		\$5. 00
Hoisting fork.....	1	1. 25	1. 25	
Knife.....	1	. 75	. 75	
Pulleys.....	4	. 40	1. 60	
Rope (1-inch).....	135 feet.		6. 00	
Rope ($\frac{1}{2}$ -inch).....	65 feet.		. 60	
Scythe and snath.....	1	1. 25	1. 25	
Sickle.....		. 50		
Slings.....		2. 00		
Stack cover.....		8. 00		
			16. 25	5. 00
Small grain and seed:				
Binder cover.....		3. 00		
Cradle.....		5. 00		
Hand rake.....	1	. 25	. 25	
Measure.....	1	. 50	. 50	
Sacks.....		. 20		
Scoop shovel.....	1	1. 00	1. 00	
Straw fork.....		. 70		
			1. 75	
Sugar beets:				
Beet fork.....		1. 50		
Beet hoe.....		. 50		
Beet topper.....		. 25		

List of articles of minor equipment found on one or more of the 33 farms.	Number needed on farm.	Approximate cost—		
		Per article.	Of articles suggested as essential.	Of articles not essential but very desirable.
Potatoes:				
Fork or hook.....	1	\$1.50	\$1.50	.....
Hand planter.....		1.75		.....
Scoop.....		1.50		.....
			1.50	.....
Maple sugar:				
Covers.....		.06		.....
Gathering pail.....		.75		.....
Sap buckets.....		.20		.....
Scoop.....		1.00		.....
Spiles.....		.03		.....
Total essential.....			114.70	.....
Total very desirable but not essential.....				\$121.15

The following supplemental list, prepared by sifting suggestions submitted by over 1,700 farmers scattered throughout the country, will be found to include certain tools which though not essential, perhaps, are useful items of equipment for the average farm:

Assortment of machine and carriage bolts.....	-----
Bag truck.....	\$1.50 to \$3.00
Bolt cutters.....	1.00 or more.
Gasoline blow torch.....	1.50 to 4.00
Harness and shoe repairing outfit.....	.75 to 2.00
Pipe cutters.....	.75 to 2.00
Pipe stocks and dies.....	2.00 to 5.00
Pipe tongs.....	.85 to 1.50
Pipe vise.....	1.00 to 2.00
Soldering outfit.....	.50 to 1.00
Staple puller.....	.75 to 1.00
Wrecking tool.....	.25 to .50
Total.....	10.85 to 22.00

TOTAL COST.

The above lists¹ are designed to show approximately what is required for a complete equipment. Under "Number needed on farm" is given for each item the average number suggested as needed on a well-equipped general farm under the conditions obtaining in Ohio.

The figures given for the first cost of the various articles will, of course, vary a great deal with the location of the purchaser and the quality of the goods. Those given here are for a fair grade of tools. Cheaper ones may be had, and the best will cost more.²

The total cost of the various items suggested, though it may seem extremely large in comparison with the usual estimates, is not unreasonable if a rather complete equipment is desired. Taking the grand-total inventory of items mentioned in this list for all the farms, using the first-cost prices given, and dividing by 33, the first cost for the average farm inventoried is found to be about \$190. The discrepancy between this figure and that given for the total cost of items suggested, \$114.70, is due to the fact that some items included in the inventory lists of many of these farms were not essential for the average farm. The list of "essential articles" indicates a rather complete farm outfit.

Neither the \$190 nor the \$114.70, however, includes any allowance for a stock of materials and tools for the repair of equipment. The necessary expenditure for certain of the items under "not essential" would save many trips to town for repairs and materials and would reduce the repair bill, which assumes important proportions on some farms. With these tools to work with, many jobs may be done on the farm on rainy days when the labor would not otherwise be used advantageously. Whether it is advisable to include in the farm inventory all the items listed in the last column will depend largely upon the amount of repair work to be done on the farm, the facilities for having this work done off the farm, and the mechanical skill of the farmer and his assistants. On most farms there is an abundance of constructional and repair work which can be done with the farm labor, provided they have the necessary tools to work with. This work can usually be done more cheaply with the farm labor, provided time is taken which could not be more profitably devoted to the regular farm operations. It

¹ Not all the items listed are necessary for a satisfactory farm equipment, and on no farm were they all reported. A few articles found have been omitted as being of an extremely unusual character. Many items which might be called farm equipment because found in farm rather than in town homes are not included, the aim being to present a suggestive list of miscellaneous farm tools, etc., for the convenience of the farm manager.

² No attempt has been made to make these prices conform strictly to the abnormal conditions prevailing during the progress of the European war. At the time of this publication (1917) certain articles here listed were selling at prices far above the normal level.

may be safely stated that the necessary investment to secure these items is usually profitable.¹

ADVANTAGE OF MAKING A LIST.

A careful study of these lists will bring out many points worthy of consideration. To the owner of a farm who has had no occasion from time to time to collect his miscellaneous equipment and take account of its extent, this study should suggest the advisability of taking an annual inventory of the small as well as of the large equipment in order to keep track of his investment. The practice of taking an inventory, even of the larger pieces of machinery, is not as common as it should be, and in many cases where an invoice is taken the small stuff is lumped in one item. During the process of taking the inventories used in compiling this circular the owner almost invariably expressed astonishment at the extent to which his capital was invested in miscellaneous minor articles.

Tenant farmers, especially those who have frequent occasion to move, ordinarily will be found better posted than owners as to the extent of their miscellaneous equipment, and this usually will be found much nearer the actual necessities than the equipment of the resident owner. To both owners and renters, however, it is earnestly recommended that an inventory be taken for the purpose of determining the number and value of the articles on hand and that thereafter provision be made for keeping track of the various articles in a systematic manner. In this way loss through carelessness and possible theft can be detected and guarded against, while at the same time expenditures of time and money in looking for and duplicating lost articles will be reduced to a minimum, as will also depreciation on account of neglect.

These lists should prove of great value to the prospective farmer. Even to one more or less familiar with farming the compiling of a complete list of articles necessary for an average-sized farm is often almost an impossibility. The experience of men born and raised on the farm and temporarily separated from it during a college course will bear out this statement. Take, for example, the case of a man who, though in charge of an experimental farm for four years prior to taking up farming on his own account, made an initial allowance of but \$25 for small tools and sundries. After going over an incomplete list similar to the foregoing he bought from a local hardware dealer a very modest lot of small tools, amounting to over \$100 in value, obtaining a cash discount of 10 per cent by lumping his purchases. A similar course might well be pursued by many persons who are about to engage in general farming. As before stated, the saving

¹ For a full discussion of the question of repairs see Farmers' Bulletin 347.

effected through the merchant's discount is often considerable. In many cases it would pay interest on the investment for some years, to say nothing of the time which would be saved through having the stock complete at the beginning.

On nearly every farm some articles will be found which have been bought at second hand. No doubt a considerable saving may be effected by thus securing articles at odd times when work is not pressing. If, however, the business of the farm must be brought to a standstill while the farmer goes to a sale, it is an open question whether the saving in buying minor items in this manner will be sufficient to make up for the time spent. As a rule, these articles are summed up in the sale bill as "too numerous to mention," and no idea is given as to the exact nature or condition of the offering.



